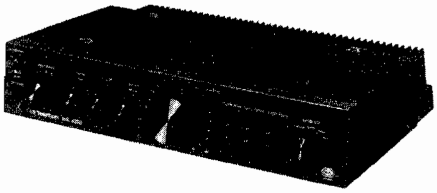
GENERAL / Teleton

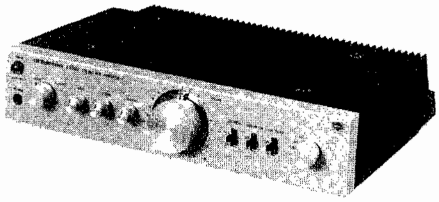
MODELS : a350/A450S
STEREO Hi-Fi AMPLIFIER

SH 037/27

SERVICE MANUAL



MODEL a350



MODEL A450S

Germany:

G C J ELECTRONICS (EUROPE) GmbH
D-4000 Düsseldorf-Heerdt, Werftstr. 20
Tel. 0211-50 47 021 Tlx. 8588366

Great Britain:

TELETON Electro (U.K.) Co. Ltd.
Technical Service Organization

Somerton Works, Prince Avenue,
Westcliff-on-Sea, Essex, SSO OHU
Tel. 0702 337681 Tlx. 99338

Netherlands:

G C J ELECTRONICS (NETHERLAND) B.V.
Marconiweg 10, Vianen
Tel. 03 473-37 44 Tlx. 40 581

Distributor:

Switzerland
Allelectric AG
Gartenstr. 12
5600 Lenzburg
Tel. 064 51 6951
Tlx. 68 208

France
TELECTRODIS S.A.
21, rue Paul-Lafargue,
94270 Le Kremlin-Bicêtre
Tel. 6 77 69 34
Tlx. 20 44 68

Specifications are subject to change without notice.

SPECIFICATIONS

ELECTRICAL PERFORMANCE

Output power
at 1,000 Hz, 0.7% THD. (8Ω) : 22 Watts.
Power Bandwidth (8Ω,0.7%,-3dB) : 10W, 10Hz–30,000 Hz
Frequency Range for Rated Power (8Ω) & THD. (0.7%) : 20W, 40Hz–20,000 Hz

Maximum Input Signal
(Input: 1,000 Hz, output: 2 watts, 0.7% THD.)
Tuner : 4V
Phono (magnetic) : 50 mV
AUX : 4V
Tape : 4V

Frequency Response (Output: 2 watts at 1,000 Hz)
Tuner/AUX/Tape : 40 Hz–16,000 Hz ±0.8 dB
Phono (equalizer: RIAA) : 40 Hz–16,000 Hz ±1 dB

Tone Control Characteristics (Input : AUX)
Bass : 100 Hz +8 dB −10 dB
Treble : 10,000 Hz ±10dB
Loudness (Input : AUX 200mV, volume control: maximum gain minus 30 dB.)
100 Hz +10 dB
10,000 Hz +5 dB
High-cut filter fc = 4 kHz –6 dB/oct.
Low-cut filter fc = 100 Hz –6 dB/oct.

Input Sensitivity & Input Impedance (Output: 20 watts at 1,000 Hz)
Tuner : 200 mV/120 KΩ
AUX : 200 mV/120 KΩ
Tape : 200 mV/120 KΩ
Phono : 3 mV/47 KΩ

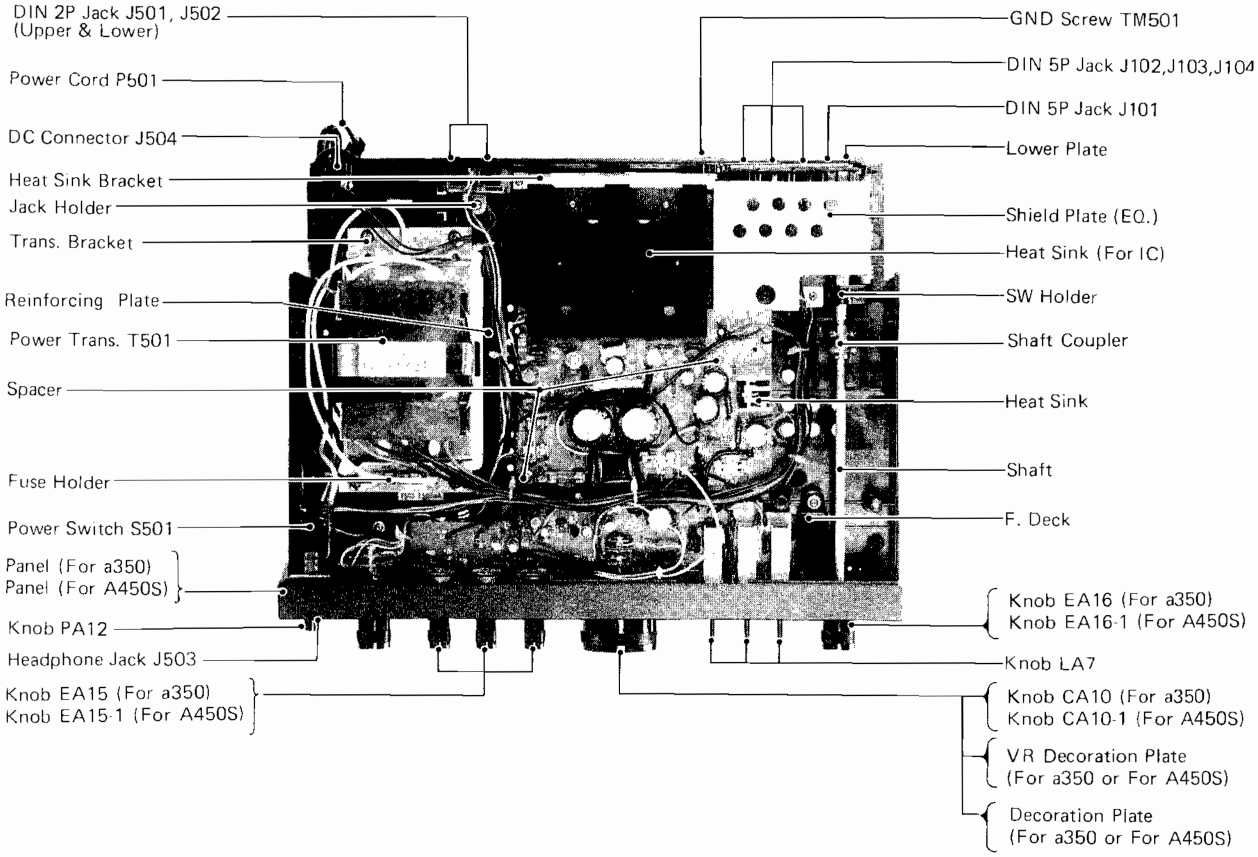
Minimum Volume Hum & Noise : 0.75mV

Signal to Noise Ratio
(Output power: 50 m watts at 1,000 Hz, unweighted)
Tuner : 58 dB
AUX : 58 dB
Tape : 58 dB
Phono : 58 dB

Channel Gain Difference
(Volume control shall be changed from max. position to −46 dB).
at 1,000 Hz 4 dB max.
250 Hz – 6,300 Hz 4 dB max.

Tape Output Voltage and Output Impedance
(Input: AUX at 1,000 Hz)
Output voltage : 16 mV/47 KΩ
Output impedance : 88 kΩ ±20%

PARTS LOCATION

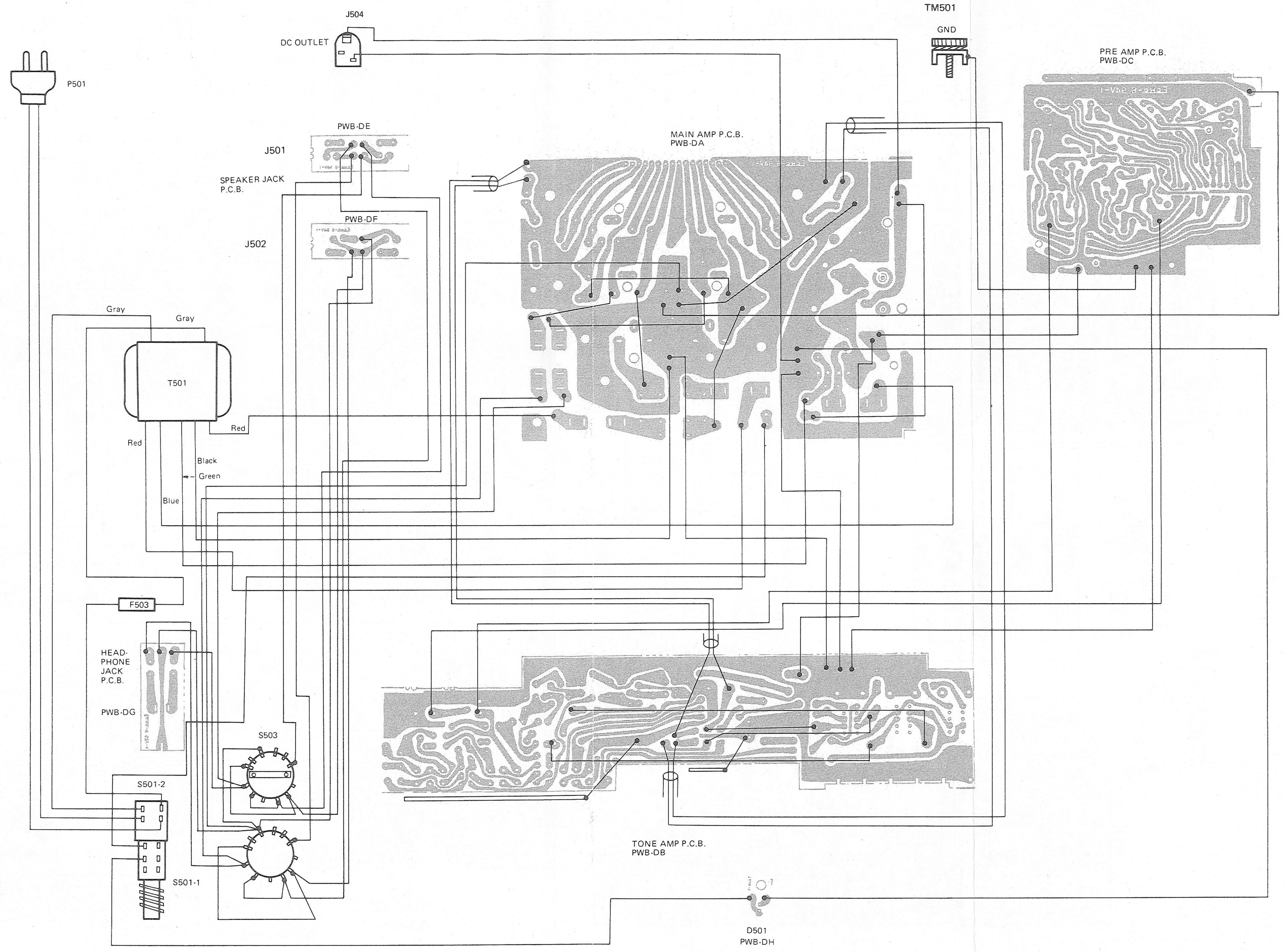

DIN 2P Jack J501, J502 (Upper & Lower)
Power Cord P501
DC Connector J504
Heat Sink Bracket
Jack Holder
Trans. Bracket
Reinforcing Plate
Power Trans. T501
Spacer
Fuse Holder
Power Switch S501
Panel (For a350)
Panel (For A450S)
Knob PA12
Headphone Jack J503
Knob EA15 (For a350)
Knob EA15-1 (For A450S)
GND Screw TM501
DIN 5P Jack J102,J103,J104
DIN 5P Jack J101
Lower Plate
Shield Plate (EQ.)
Heat Sink (For IC)
SW Holder
Shaft Coupler
Heat Sink
Shaft
F. Deck
Knob EA16 (For a350)
Knob EA16-1 (For A450S)
Knob LA7
Knob CA10 (For a350)
Knob CA10-1 (For A450S)
VR Decoration Plate (For a350 or For A450S)
Decoration Plate (For a350 or For A450S)

WARNING: FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER RECOMMENDED PARTS. THESE PARTS ARE IDENTIFIED BY (⚠) ON THE SCHEMATIC DIAGRAM.

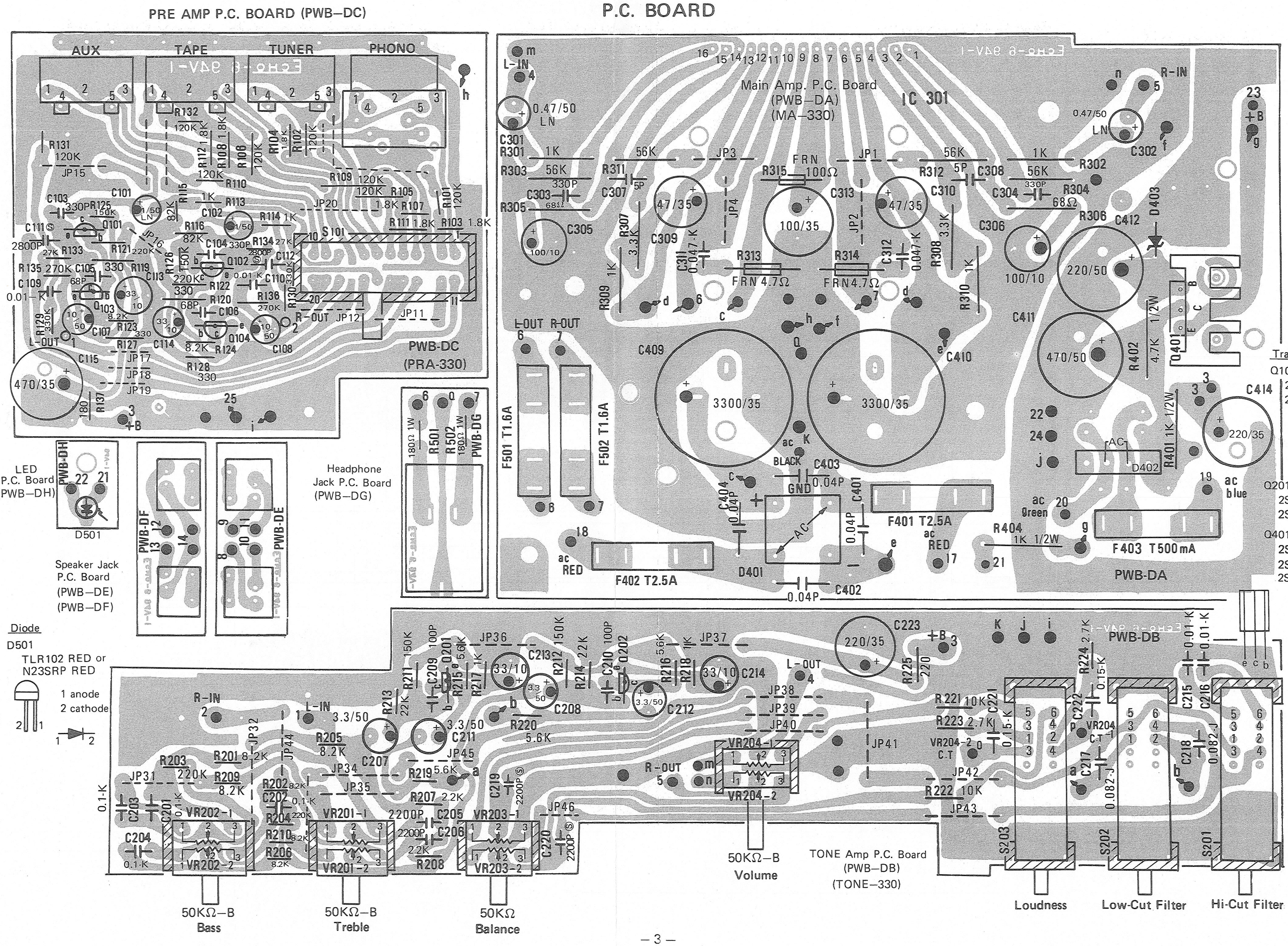
The manufacturer's warranty and liabilities will be void if any unauthorized modifications, alterations or additions are made. For replacement purposes, use the same type or specified type of wire and cable, ensuring that the positioning of the wires is followed (especially for power supply circuits). Use of alternative wiring or positioning could result in damage to the set or in a shock or fire hazard.

NO INTERNAL PRESET ADJUSTMENTS ARE PROVIDED IN THE DESIGN OF THIS APPARATUS.

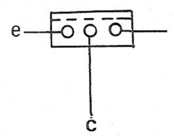
WIRING DIAGRAM


J504
DC OUTLET
TM501
GND
PRE AMP P.C.B.
PWB-DC
P501
PWB-DE
J501
SPEAKER JACK
P.C.B.
MAIN AMP P.C.B.
PWB-DA
PWB-DF
J502
Gray
Gray
T501
Red
Red
Black
Green
Blue
F503
HEAD-
PHONE
JACK
P.C.B.
PWB-DG
S503
S501-2
S501-1
TONE AMP P.C.B.
PWB-DB
D501
PWB-DH

P.C. BOARD


PRE AMP P.C. BOARD (PWB–DC)
AUX
TAPE
TUNER
PHONO
S101
R-OUT
L-OUT
PWB-DC
(PRA-330)
LED P.C. Board (PWB–DH)
PWB-DH
D501
Speaker Jack P.C. Board (PWB–DE) (PWB–DF)
PWB-DF
PWB-DE
Headphone Jack P.C. Board (PWB–DG)
PWB-DG
R501 180Ω 1W
R502 180Ω 1W
Main Amp. P.C. Board (PWB–DA) (MA–330)
IC 301
L-IN
R-IN
L-OUT
R-OUT
F501 T1.6A
F502 T1.6A
F401 T2.5A
F402 T2.5A
F403 T500mA
C409 3300/35
C410 3300/35
BLACK
GND
ac RED
ac Green
ac blue
D401
D402
D403
Q401
PWB-DA
TONE Amp P.C. Board (PWB–DB) (TONE–330)
PWB-DB
VR202-1
VR202-2
VR201-1
VR201-2
VR203-1
VR203-2
VR204-1
VR204-2
S203
S202
S201
50KΩ–B Bass
50KΩ–B Treble
50KΩ Balance
50KΩ–B Volume
Loudness
Low-Cut Filter
Hi-Cut Filter

Transistor
Q101, 102, 103, 1
2SC732TM-GR
2SC1571F
or
D401 S4VB
D402 S1VB10
D403 HZ15L-2
Q201, 202
2SC1815GR or
2SC1571-F
Q401
2SC1815-GR or
2SC536-F
2SD 330E



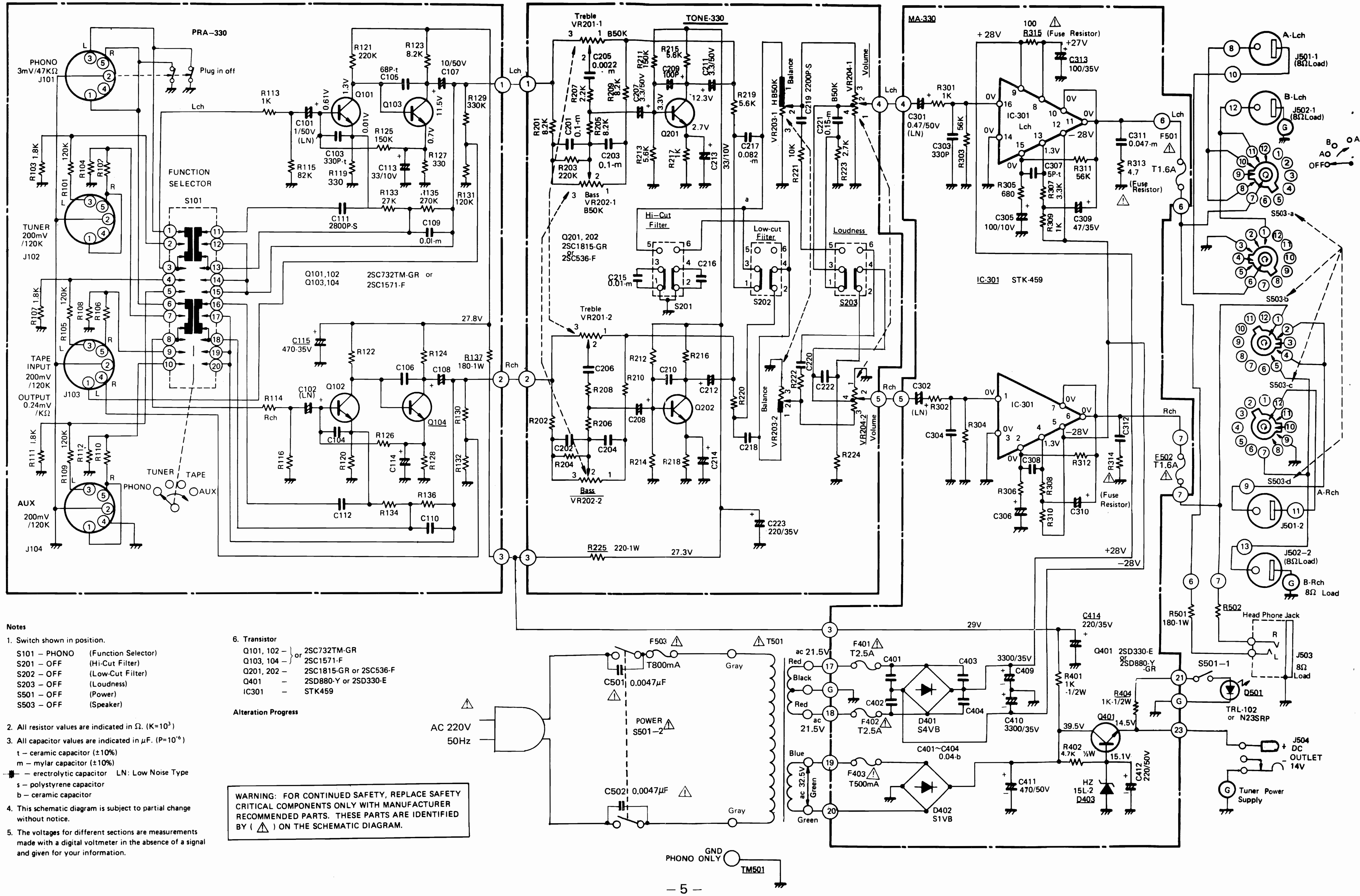
Diode
D501
TLR102 RED or
N23SRP RED
1 anode
2 cathode

PARTS LIST

(Standard Parts Resistors, Capacitors, Screws are not listed here.)

Ref. No.	Part No.	Description
Cabinet		
	2176001505	Upper plate
	2186100364	Adiabatic plate (P.T)
	2186100392	Adiabatic plate (Stabilizer)
	2186100420	Adiabatic plate (IC)
	2171201262	Decoration plate (For A450S)
	2171201463	Decoration plate (For a 350)
	2187000307	Knob CA10-1 (For A450S)(Volume)
	2187000291	Knob CA10 (For a350)(Volume)
	2176601992	Pointer B (VR)
	2176602104	VR Decoration plate (For A450S)
	2176602020	VR Decoration plate (For a350)
	2186100387	Shield plate (For tuner)
	2176001990	Panel (For A450S)
	2176001962	Panel (For a350)
	2187100372	Knob EA16-1 (For A450S)(Selector)
	2187100340	Knob EA16 (For a350)(Selector)
	2187300305	Knob PA12 (Power Switch)
	2187100361	Knob EA15-1 (For A450S) (Bass, Tre., Balance)
	2187100355	Knob EA15 (For a350) (Bass, Tre., Balance)
	2187600151	Knob LA7 (Loud., Filter)
	2176301400	Rubber Foot
Chassis Parts		
IC301	2102400232	IC STK-459
	2168101040	Heat sink (For IC)
S503	2148000023	Rotary switch (1089)
J504	2149300810	DC connector
⚠P501	2095002641 2195000065	Power cord (144) 2P Class II
	2186100413	Shield plate (For EQ)
	2176301439	Cushion A (For Shield Plate)
	2176301442	Cushion B (For Shield Plate)
	2176300343	Cushion C (For Shield Plate)
⚠T501	2117300225	Power trans.
	2168507887	Trans. bracket
⚠S501	2148200396	Power switch
	2149200103	Fuse holder
	2176602047	Plastic foot
C501 502	2129100009	Capacitor MP 0.0047μF
	2182000059	Capacitor cover
	2176001973	Lower plate
TM501	2149100192	GND screw
	2176001600	F. deck
	2168507541	Heat sink bracket
	2168101008	Shield plate
	2176602034	Spacer (For MA P.C.B.)
	2176602005	SW holder
	2168507524	Jack holder
	2182400062	Cord stopper SR-4P-4
	2170600455	Shaft coupler
	2170600461	Shaft
	2176301425	Rubber cushion B (12ϕ x 8)
	2176300007	Rubber cushion (775) 5 x 15 x 5
	2168507786	Reinforcing plate
⚠ F503	2147200121	SEMKO fuse 250V T800mA
	2175901731	Fuse label
MA P.C. Board		
	2161230005	PWB-DA (B.C.E.F)
⚠ F401, 402	2147200114	SEMKO fuse 250V T2.5A
⚠ F403	2147200022	SEMKO fuse 250V T500mA
Q401	2104500544	Transistor 2SD880-Y
	2104500174	or Transistor 2SD330-E
	2104500559	or Transistor 2SD880-GR
D401	2109200124	Silicon rect. (Stack-F) S4VB20-F
D402	2109200222	Silicon rect. (Stack) S1VB10
D403	2108200319	Zener diode HZ15L-2
	2161235008	PWB-DG (A.B.C.E.F.H)
	2161233007	PWB-DE (A.B.C.F.G.H)
	2161234004	PWB-DF (A.B.C.E.F.H)
J501-1, 501-2, 502-1, 502-2	2149300802	DIN 2P Jack
	2161236001	PWB-DH (A.B.C.E.F.G)
⚠ F501, 502	2147200036	SEMKO fuse (2093) T1.6A 250V
	2168100961	Heat sink
	2149200033	Fuse holder (4013)
J503	2149300827	Headphone jack
D501	2111300223	LED TLR102 (RED)
	2111300216	or LED N23SRP (RED)
	2176300468	Rubber (For LED)
PRA P.C. Board		
	2161232009	PWB-DC (A.B.E.F.G.H)
S101	2148100449	Slide rotary switch
J101	2149300912	DIN 5P jack TCS-0720
J102~ 104	2149300792	DIN 5P jack TCS-700
Q101~ 104	2103000649	Transistor 2SC732TM-GR
	2103100370	or Transistor 2SC1571-F
TONE P.C. Board		
	2161231000	PWB-DB (A.C.E.F.G.H)
S201~ 203	2148400133	Lever switch
VR201, 202	2143000445	Center Click B50Kx2 (Tone Control)
VR203	2143000432	Center Click HB50Kx2 (Balance Control)
VR204	2143000450	41 Detent B50Kx2 (Volume Control)
Q201, 202	2003181523	Transistor 2SC1815GR
	2103000043	or Transistor 2SC536F

SCHEMATIC DIAGRAM


PRA–330
PHONO 3mV/47KΩ J101
Plug in off
TUNER 200mV /120K J102
TAPE INPUT 200mV /120K
OUTPUT 0.24mV /KΩ
J103
AUX 200mV /120K
J104
FUNCTION SELECTOR
S101
TUNER
TAPE
PHONO
AUX
Q101,102 Q103,104 2SC732TM-GR or 2SC1571-F
Q101
Q102
Q103
Q104
27.8V
Lch
Rch
TONE-330
Treble VR201-1 B50K
Treble VR201-2
Bass VR202-1 B50K
Bass VR202-2
Q201, 202 2SC1815-GR or 2SC536-F
Q201
Q202
Hi-Cut Filter
S201
Low-cut Filter
S202
Loudness
S203
Balance
VR203-1 HB50K
VR203-2
Volume
VR204-1
VR204-2
R225 220-1W
27.3V
MA-330
+28V
R315 (Fuse Resistor)
+27V
IC-301 Lch
IC-301
IC-301 STK-459
F501 T1.6A
F502 T1.6A
(Fuse Resistor)
A-Lch
J501-1 (8ΩLoad)
B-Lch
J502-1 (8ΩLoad)
B
A
OFF
S503-a
S503-b
S503-c
S503-d
A-Rch
J501-2
J502-2 (8ΩLoad)
B-Rch 8Ω Load
+28V
−28V
Head Phone Jack
J503 8Ω Load
R501 180-1W
S501–1
D501 TRL-102 or N23SRP
J504 DC OUTLET 14V
Tuner Power Supply
29V
C414 220/35V
Q401 2SD330-E or 2SD880-Y -GR
R404 1K-1/2W
R401 1K -1/2W
R402 4.7K ½W
HZ 15L-2 D403
C411 470/50V
C412 220/50V
39.5V
14.5V
15.1V
C401~C404 0.04-b
D401 S4VB
D402 S1VB
C409 3300/35V
C410 3300/35V
F401 T2.5A
F402 T2.5A
F403 T500mA
F503 T800mA
T501
ac 21.5V
ac 32.5V
Red
Black
Green
Blue
Gray
C501 0.0047μF
C502 0.0047μF
POWER S501–2
AC 220V 50Hz
GND PHONO ONLY
TM501

Notes

1. Switch shown in position.

S101 – PHONO	(Function Selector)
S201 – OFF	(Hi-Cut Filter)
S202 – OFF	(Low-Cut Filter)
S203 – OFF	(Loudness)
S501 – OFF	(Power)
S503 – OFF	(Speaker)

2. All resistor values are indicated in Ω. (K=10^3)
3. All capacitor values are indicated in μF. (P=10^{-6})
   - t – ceramic capacitor (±10%)
   - m – mylar capacitor (±10%)
   - ─▮─ – erectrolytic capacitor LN: Low Noise Type
   - s – polystyrene capacitor
   - b – ceramic capacitor
4. This schematic diagram is subject to partial change without notice.
5. The voltages for different sections are measurements made with a digital voltmeter in the absence of a signal and given for your information.
6. Transistor

Q101, 102 –	or	2SC732TM-GR
Q103, 104 –		2SC1571-F
Q201, 202 –		2SC1815-GR or 2SC536-F
Q401	–	2SD880-Y or 2SD330-E
IC301	–	STK459

Alteration Progress

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